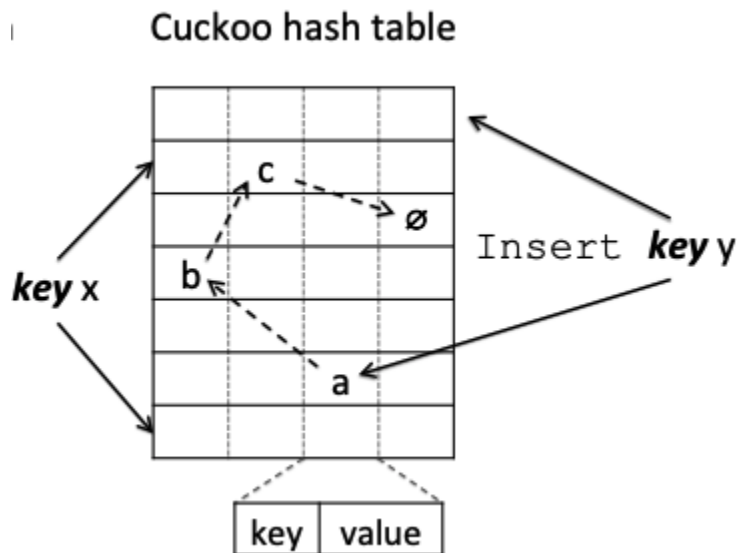


## CS 261P Project #1 Assessment: Cuckoo Hashing

For the project assessment, you will implement the following individually (solo). You can reuse the code you have implemented for Project #1 already.

### Assessment Specification:

Make a copy of your cuckoo\_hash\_24.py file and name it cuckoo\_hash\_assess.py



- 1) Implement the version of cuckoo hash table where only 1 physical table is used as shown in the above figure. This is Figure 3 from the paper <https://www.cs.princeton.edu/~mfreed/docs/cuckoo-eurosys14.pdf>. You will still use 2 hash functions, but the hash indices generated from both hash functions will point to buckets in the same table. Each bucket still has 4 entries.
- 2) You will modify the insert method according to what's described in the paper. "To Insert a new key into the table, if either of the two buckets has an empty slot, it is then inserted in that bucket; if neither bucket has space, a random key from one candidate bucket is displaced by the new item. The displaced item is then relocated to its own alternate location, possibly displacing another item, and so on, until a maximum number of displacements is reached."
  - a) If both buckets have empty slots, we will prioritize the hash bucket from the  $h_0$  hash function for insertion.
  - b) If neither bucket has space, we will prioritize the hash bucket from the  $h_0$  hash function for insertion. A random key from this bucket will be selected to be displaced by the new item.

**Project Testing:**

A testing file will be released.

**Assessment submission**

The project is to be submitted to GradeScope.

**Project due date/time**

The assessment is due on **Tuesday, February 13, at 11:59 PM PST.**

Late assessment will be penalized 2.5% for every hour the project is late, rounded up to the nearest hour.

**Miscellaneous notes**

The projects are to be done **individually** and there should be one submission per student.

If you have questions about the project of general interest, the best way to ask your question is on the Ed Discussion message board.